

We claim:

1. A network coupling device for coupling a data network to a local area network, the network coupling device comprising:

5 functional components operating on a physical layer of an open system interconnect (OSI) reference model, including:

10 a first data access device, to be coupled to cabling of the data network, for extracting data packets from the cabling and for feeding the data packets into the cabling, while avoiding adverse effects on an actual intended purpose of the cabling; and

15 a second data access device, to be coupled to a transmission medium of the local area network, for extracting the data packets from the local area network and for feeding the data packets into the local area network; and

20 a data transmission device operating on a data link layer of the OSI reference model and coupled to said first data access device and to said second data access device, said data transmission device providing an unchanged transmission of extracted data packets between said first data access device and said second data access device without evaluating

addressing information concerning the data link layer contained in the data packets.

2. The network coupling device according to claim 1, wherein
5 the data network is a telephone system and said first data access device is provided for extracting the data packets from the cabling of the telephone system and for feeding the data packets into the cabling.

3. The network coupling device according to claim 1, wherein
10 the cabling is power supply cabling and said first data access device is provided for extracting data packets from the power supply cabling and feeding the data packets into the power supply cabling.

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4. The network coupling device according to claim 1, wherein
said data transmission device has a buffer memory for buffer-storing the extracted data packets before their transmission to one of said first data access device and said second data access device.

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5. The network coupling device according to claim 4, wherein
said buffer memory is a first-in-first-out memory.

25 6. The network coupling device according to claim 4, wherein
said buffer memory is a dual-port random access memory.

7. The network coupling device according to claim 1, wherein
said data transmission device has, for a transmission
direction from said first data access device to said second
5 data access device and for an opposite transmission direction,
a buffer memory for buffer-storing the data packets to be
transmitted in a direction concerned.

8. The network coupling device according to claim 1, said
10 first data access device, said second data access device and
said data transmission device form an integrated chip.

9. A data network for transmitting data between a first data
processing device and a second data processing device through
15 cabling actually intended for other purposes, comprising:

a network coupling device, containing:

functional components operating on a physical layer of an
20 open system interconnect (OSI) reference model, said
function components including:

25 a first data access device, to be coupled to the
cabling of the first data processing device, for
extracting data packets from the cabling and for
feeding the data packets into the cabling, while

avoiding adverse effects on an actual intended purpose of the cabling of the first data processing device; and

5 a second data access, to be coupled to a transmission medium of the second data processing device, for extracting the data packets from the second data processing device and for feeding the data packets into the second data processing device; and

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for*
a data transmission device operating on a data link layer of the OSI reference model and coupled to said first data access device and to said second data access device, said data transmission device providing an unchanged transmission of extracted data packets between said first data access device and said second data access device without evaluating addressing information concerning the data link layer contained in the data packets.

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